ヒト気管支上皮細胞と上皮センイ芽細胞の成育におよぼす人参テトラペプチドとその異性体

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Growth of Cultured Human Bronchiogenic Epithelioid CCD–14 Br Cells and Dermal Fibroblasts, NB1 RGB Treated with Ginseng Tetrapeptide and its Isomer

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ABSTRACT The configurations of the component amino acids in ginseng tetrapeptide **1** isolated from *Panax ginseng* were determined by HPLC with an optical resolution column and the structure of **1** was established to be H–L–Val–γ–D–Glu–D–Arg–Gly–OH. Synthesis of the ginseng tetrapeptide, **1** and of the configuration and conjugation isomers, H–L–Val–γ–L–Glu–L–Arg–Gly–OH(**2**), H–L–Val–D–Glu–D–Arg–Gly–OH (**3**), and H–L–Val–L–Glu–L–Arg–Gly–OH (**4**) was carried out by a solid–phase method using the Fmoc strategy. The effects of **1**—**4** on the proliferation of baby hamster kidney (BHK)–21 cells, normal female bronchiogenic epithelioid (CCD–14 Br) cells, and normal human epidermal fibroblast (NB1 RGB) were examined. Only 1 showed 32 and 23% enhancement of BHK–21 and human CCD–14 Br cells growth, respectively, at a concentration of 13.6 μM and 41% enhancement of NB1 RGB cells growth at a concentration of 32 μM under the conditions employed. It was shown that both the configuration of the component amino acids and the peptide conjugation at a γ–position of D–Glu in **1** are important for proliferation of the cells. Compound 1 exerted a prominent effect on cell stimulation and growth rate without any morphological change and showed no cytotoxicity.

抄録　薬用人参より単離されたテトラペプチドの構造はH–L–Val–γ–D–Glu–D–Arg

–GlyOH (1) であると光学活性HPLCやアミノ酸分析によって決定された。1の異性体3種類を合成し、1—4のテトラペプチドについて各種細胞を用いてその増殖活性の比較を行った。

その結果、1のみがハムスターセンイ芽細胞、ヒト気管支上皮細胞およびヒト上皮細胞に対する増殖活性を示した。このことは1の構造でD–Gluがγ–位でペプチド結合したことによる細胞増殖活性と考えられた。なお1のテスト細胞に対する副作用や毒性は示さなかった。

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